

What is claimed is:

1. A surface mount MELF capacitor comprising:

a wire having opposite first and second end surfaces and side surface;

a conductive powder element electrically connected to the wire exposing the second and

5 first end surfaces, and covering the wire side surfaces;

insulative material surrounding at least a portion of the conductive powder element and a portion of the wire side surfaces;

a first terminal formed by a first body of conductive material disposed over the first end surface of the wire and a portion of the insulating material; and

10 a second terminal formed by a second body of conductive material disposed over the conductive powder element and being electrically connected to the second end of the conductive powder element.

2. The surface mount MELF capacitor of claim 1 wherein the first terminal is an

15 anode and the second terminal is a cathode end.

3. The surface mount MELF capacitor of claim 1 wherein the conductive powder element is made of powder.

20 4. The surface mount MELF capacitor of claim 3 wherein the powder is from the group consisting of: Ta, Nb, Hf, Zr, Ti, V, W, Be, and Al.

5. The surface mount MELF capacitor of claim 3 wherein the powder is a substrate of a metal from the group consisting of: Ta, Nb, Hf, Zr, Ti, V, W, Be, and Al.

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6. The surface mount MELF capacitor of claim 3 wherein the powder has been electrophoretically deposited upon the wire.

7. The surface mount MELF capacitor of claim 1 wherein the conductive powder 30 element has a density between 3-8 g/cc.

8. The surface mount MELF capacitor of claim 1 wherein the conductive powder element has a capacitance-voltage between 10 CV and 150 KCV.

9. A method of creating a surface mount MELF capacitor comprising:

- 5 providing a wire having opposite first and second end surfaces and side surfaces;
- forming a conductive powder element upon the wire;
- the conductive powder element having a cathode end, an anode end, and conductive powder element sides extending between the anode and cathode ends
- exposing the first and second ends and a portion of the wire side surfaces;
- 10 applying an insulation material over the cathode end, the conductive powder element, and wire first and second ends;
- exposing the first end and a portion of the cathode end;
- applying an anode layer of conductive material over the wire first end and the exterior surface of the insulation material adjacent the anode end of the conductive powder element so that the anode layer of conductive material is in electrical contact with and covers the wire end; and
- 15 applying a cathode layer of conductive material over the exposed portion of the cathode end of the conductive powder element.

20 10. The method of claim 10 further comprising the step arranging the wire for acceptance into a reel to reel process.

11. The method of claim 9 further comprising electrophoretically depositing the powder upon the wire.

25 12. The method of claim 11 wherein the powder is from the group consisting of: Ta, Nb, Hf, Zr, Ti, V, W, Be, and Al.

30 13. The method of claim 11 wherein the powder is a substrate of a metal from the group consisting of: Ta, Nb, Hf, Zr, Ti, V, W, Be, and Al.

14. The method of claim 11 wherein the conductive powder element has a density between 3-8 g/cc.

15. The method of claim 11 wherein the conductive powder element has a capacitance-
5 voltage between 10 CV and 150 KCV.

16. The method of claim 9 wherein the step of exposing is performed using laser cutting.